34. The isolated DNA of Claim 33, wherein the DNA sequence is SEQ ID NO 3.

35. The isolated DNA of Claim 31, comprising a fragment comprising an N-terminal domain, a central non-canonical Zn finder domain, and a C-terminus domain containing a K-rich region.

36. The isolated DNA of Claim33, comprising a fragment comprising an N-terminal domain, a central non-canonical Zn finder domain. and a C-terminus domain containing a K-rich region.

37. An isolated DIO-1 polypeptide coded for by SEQ ID NO 1 and variants and alleles thereof.

38. The polypeptide of Claim 37, comprising the mature human amino acid sequence of SEQ ID 2 and variants thereof.

39. An isolated DIO-1 polypeptide derived from the DNA SEQ ID NO 3 and variants and alleles thereof.

40. A polypeptide according to Claim 39, comprising, the mature murine amino acid sequence in SEQ ID NO 4.

41.A nucleic acid probe for the detection of a nucleic acid sequence encoding a polypeptide of SEQ ID NO 2 or SEQ ID NO 4.

42. The nucleic acid probe of Claim 41, wherein said probe comprises at least 14 contiguous nucleotides of SEQ ID NO 1 or SEQ ID NO 3.

43. The isolated DNA of SEQ ID NO 1, or SEQ ID NO 3, wherein the isolated DNA comprises a cDNA sequence.

44. An expression vector containing a DNA sequence of SEQ ID NO 1, or SEQ ID NO 3, variants, alleles and fragments thereof.

45. A cell transformed with a sequence of SEQ ID NO 1, SEQ ID NO 2, SEQ ID NO 3, or SEQ ID NO 4, such that it allows the direct replication and expression of said sequence.

46. The cell of Claim 45 wherein the cell is a mammalian or a bacterial cell

47. A process for producing a protein encoding SEQ ID NO 2, or SEQ ID NO 4 and alleles and variants thereof, comprising culturing a cell of claim 45 in a suitable culture medium and isolating the protein thereof.

48. The process of Claim 47 wherein the cell is a mammalian or a bacterial cell.

49. A method for identifying clones encoding a DIO-1 polypeptide of SEQ ID NO 2, or SEQ ID No 4, comprising screening a genomic or cDNA library with a nucleic acid probe

according to claim 10 under low stringency hybridization conditions, and identifying those clones which display a substantial degree of hybridization to said probe.

50. A method of identifying agonists and antagonists of the protein of SEQ ID NO 2, or SEQ ID NO 4, comprising transduction or transfection of a mammalian cell line with an expression vector comprising nucleic acid sequences lacking the nuclear localization sequences or lacking the Zn finger domain or lacking the acidic domain or lacking the lysine-rich domain and thereafter identifying the agonist or antagonist interacting with the DIO-1 gene.

51. An agonist or antagonist according to Claim 50.

52. A method of identifying ligands with which the polypeptide of SEQ ID NO 2, or SEQ ID NO 4 interacts following cloning into and expression in appropriate vectors and using the two-hybrid method.

53. A method to produce specific monoclonal and polyclonal antibodies against the polypeptide according to claims SEQ ID NO 2, or SEQ ID NO 4 comprising the infection of the polypeptide to a mammalian.

54. Method for treatment of diseases which are characterized by the alteration in cell death or by hyperproliferation characterized by the administration of compounds according to SEQ ID NO 2,or SEQ ID NO 4, agonists or antagonists to SEQ ID NO 2, or SEQ ID NO 4 .

55. Method according to Claim 54 by administration of a therapeutically effective amount of the compound.

56. Method according to Claim 54 in which the disease is cancer, an auto immune disease, diabetes, rheumatoid arthritis, benign and malignant tumors or hyperproliferative skin disorders

57. Method for treatment of diseases which are characterized in the alteration in cell death or by hyperproliferation comprising introducing into a mammal a nucleic acid vector according to Claim 44 and wherein said nucleic acid vector is capable of transforming a cell in vivo and expressing said polypeptide in said transformed cell.

58. A pharmaceutical formulation comprising compounds of SEQ ID NO 2, or SEQ ID NO 4, agonists or antagonists to SEQ ID NO 2, or SEQ ID NO 4 and one or more therapeutically acceptable excipients.

59. A method for identifying a ligand to the compound according to SEQ ID NO 2, or SEQ ID NO 4, agonists or antagonists to SEQ ID NO 2, or SEQ ID NO 4 by a cell-based reporter assay. transgenic-animal reporter assay or *in vitro*-binding assay.

60. A method for identifying a substance for treatment of a condition allocated by a polypeptide of SEQ ID NO 2, or SEQ ID NO 4 comprising screening for an agonist or an antagonist of the polypeptide signal transduction to be used for treating metabolic, proliferative or inflammatory conditions.

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61. A compound according to SEQ ID NO 2, or SEQ ID NO 4 or agonists or antagonists to them for use as a medicament.

In light of the amendments, Applicants are of the opinion that the application is now in condition for allowance. Such action is respectfully requested. If the Examiner believes any informalities remain in the application which may be corrected by Examiner's Amendment, or there are any other issues that can be resolved by telephone interview a telephone call to the undersigned attorney at (404) 815-6500 is respectfully solicited.

Respectfully submitted,

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